LISTING OF CLAIMS

This listing of clams will replace all prior versions and listings of claims in the application.

Claim 1 (Currently amended): A computer-readable medium storing ~~whereon~~ an image data interpolation program ~~has been recorded~~ configured to implement pixel interpolation to add interpolated pixels to image data of an image represented in multi-tone dot matrix pixels ~~on a computer, said computer-readable medium with the image data interpolation program recorded thereon, after being set ready for use on a computer, making~~ by controlling the computer reading the image data interpolation program to perform:

a function of image data acquisition that acquires said image data;

~~a first interpolation processing function that interpolates pixels to said image data without decreasing the degree of tone value difference between the existing pixels, said first interpolation processing function executing pattern matching interpolation according to a predetermined rule, when a given pattern exists in reference pixels;~~

~~a second interpolation processing function that interpolates pixels to said image data without affecting the gradation of the tones of the image;~~

a function of histogram acquisition that acquires a histogram of a number of discrete luminance values calculated by linearly combining color component brightness values of at least each of ~~the~~ a set of reference pixels; ~~and~~

a function of determining the number of discrete luminance values acquired performing the function of histogram acquisition;

a function of determining a luminance value width as a difference between a maximum luminance value of the discrete luminance values and a minimum luminance value of the discrete luminance values; and

a function of ~~determining if the image is a non-natural image or a natural image, or that it can not be determined whether the image is either a natural image or a non-natural image, based on the number of discrete luminance values appearing in the histogram of discrete luminance values, said determination that the image is a non-natural image resulting in said~~ providing a blend of a first interpolation processing function~~, said determination that the image is a natural image resulting in said~~ that interpolates pixels to add to said image data without decreasing the degree of tone value difference between the existing pixels and a second interpolation processing function~~, and if the image data cannot be determined to be either said natural image or said non-natural image, both the first and second interpolation processing functions are performed and results from the first and second interpolation processing functions are blended~~ that interpolates pixels to add to said image data without affecting the gradation of the tones of the image based on a blending ratio that is determined based on the luminance value width being in a predetermined range when the number of discrete luminance values is larger than a threshold number.

Claims 2-11 (Canceled).

Claim 12 (Currently Amended): An image data interpolation method interpolating pixels to add to image data of an image represented in multi-tone dot matrix pixels comprising:

~~a step of image data acquisition that acquires~~ acquiring said image data;

~~a first interpolation processing step that interpolates pixels to said image data without decreasing the degree of tone value difference between the existing pixels, said first interpolation processing step executing pattern matching interpolation according to a predetermined rule, when a given pattern exists in reference pixels;~~

~~a second interpolation processing step that interpolates pixels to said image data without affecting the gradation of the tones of the image second interpolating step;~~

~~a step of histogram acquisition that acquires~~ acquiring a histogram of a number of discrete luminance values calculated by linearly combining color component brightness values of at least each of ~~the~~ a set of reference pixels; ~~and~~

determining the number of discrete luminance values acquired in the step of acquiring the histogram;

determining a luminance value width as a difference between a maximum luminance value of the discrete luminance values and a minimum luminance value of the discrete luminance values; and

~~a step of determining if the image is a non-natural image or a natural image, or that it cannot be determined whether the image is either a natural image or a non-natural image, based on the number of discrete luminance values appearing in the histogram of discrete luminance values, said determining that the image is a non-natural image resulting in said first interpolation processing , said determining that the image is a natural image resulting in said second interpolation processing, and if the image data cannot be determined to be either said natural image or said non-natural image, performing both the first interpolation processing and the second interpolation processing and~~ blending results from ~~the~~ first interpolation processing of interpolating pixels to add to said image data without decreasing the degree of tone value difference between the existing pixels and ~~the~~ second interpolation processing of interpolating pixels to add to said image data without affecting the gradation of the tones of the image based on a blending ratio that is determined based on the luminance value width being in a predetermined range when the number of discrete luminance values is larger than a threshold number.

Claims 13-22 (Canceled).

Claim 23 (Currently amended): An image data interpolation apparatus for interpolating pixels to add to image data of an image represented in multi-tone dot matrix pixels comprising:

an image data acquisition unit that acquires said image data;

a first interpolation processing unit that performs first interpolation processing to ~~interpolates~~ interplolate pixels to add to said image data without decreasing the degree of tone value difference between the existing pixels~~, said first interpolation processing unit executes pattern matching interpolation according to a predetermined rule, when a given pattern exists in reference pixels~~;

a second interpolation processing unit that performs second interpolation processing to ~~interpolates~~ interplolate pixels to add to said image data without affecting the gradation of the tones of the image;

a histogram acquisition unit that acquires a histogram of a number of discrete luminance values calculated by linearly combining color component brightness values of at least each of ~~the~~ a set of reference pixels; ~~and~~

a determining unit that determines the number of discrete luminance values acquired performing the function of histogram acquisition;

a difference determining unit that determines a luminance value width as a difference between a maximum luminance value of the discrete luminance values and a minimum luminance value of the discrete luminance values; and

~~a first~~ an interpolation blending unit ~~of determining if the image is a non-natural image or a natural image, or that it cannot be determined whether the image is either a natural image or a non-natural image, based on the number of discrete luminance values appearing in~~

~~the histogram of discrete luminance values, said determining that the image is a non-natural image resulting in said first interpolation processing, said determining that the image is a natural image resulting in said second interpolation processing, and if the image data cannot be determined to be either said natural image or said non-natural image, performing both the first and second interpolation processing~~ and ~~blending~~ that blends results from the first interpolation processing and the second interpolation processing based on a blending ratio that is determined based on the luminance value width being in a predetermined range when the number of discrete luminance values is larger than a threshold number .

Claims 24-33 (Canceled).

Claim 34 (Currently amended): The computer-readable medium ~~with the image interpolation program recorded thereon~~ according to Claim 1, ~~wherein~~ further comprising:

~~said pattern matching interpolation refers to pixels determined based on the given pattern~~

a function of performing only the first interpolation processing when the number of discrete luminance values is smaller than the threshold number.

Claim 35 (Canceled).

Claim 36 (New): The computer-readable medium according to Claim 1, further comprising:

a function of performing only the second interpolation processing when the number of discrete luminance values is larger than the threshold number and the luminance value width has a smaller value than a minimum value of said predetermined range.

Claim 37 (New): The computer-readable medium according to Claim 1, further comprising:

a function of setting the blending ratio to a constant value when the number of discrete luminance values is larger than the threshold number and the luminance value width has a larger value than a maximum value of said predetermined range.

Claim 38 (New): The computer-readable medium according to Claim 37, wherein the constant value of the blending ratio is set so that only the first interpolation processing function is provided.